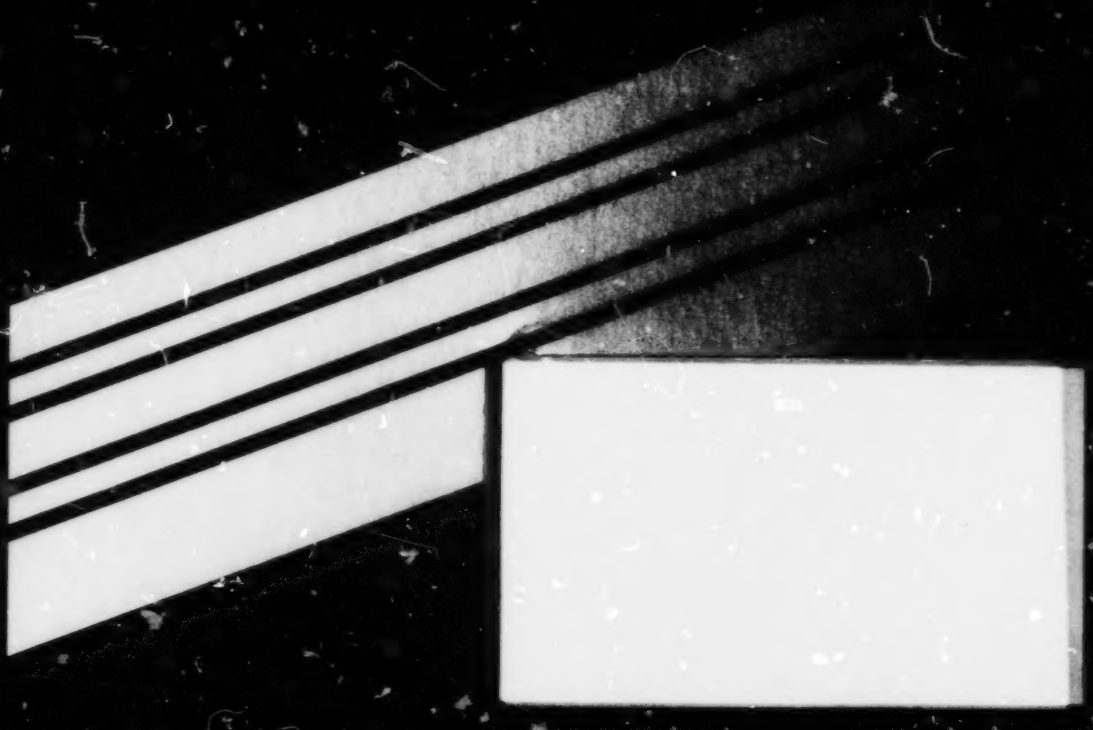
Programs Branch User Report



Solicitor General Canada
Ministry Secretariat

D.A. ANDREWS
CARLETON UNIVERSITY

J.S. WORMITH
SENIOR RESEARCH OFFICER
RESEARCH DIVISION

J.J. KIESSLING
PROBATION AND PAROLE (ONTARIO)

SELF-REPORTED CRIMINAL PROPENSITY AND CRIMINAL BEHAVIOR: THREATS TO THE VALIDITY OF ASSESSMENTS OF ATTITUDES AND PERSONALITY

NO. 1985 - 27

This working paper was prepared under contract for the Research Division in 1985 and is made available as submitted to the Ministry of the Solicitor General of Canada. The views expressed are those of the authors and are not necessarily those of the Ministry of the Solicitor General of Canada. This working paper may not be published, cited or reproduced without permission of the Ministry.

This working paper is available in French. Ce document de travail est disponible en français.

Abstract

Levels of association between self-report assessments of attitudes/personality and criminal recidivism were examined as a function of variations in research design, the nature of underlying constructs, and systematic errors in the measurement of predictor and criterion variables. Extreme group validities provided inaccurate estimates of the relative predictive criterion validity of seven sets of predictor variables. The predictive validity of procriminal sentiments and psychopathy were outstanding relative to assessments of the more distal constructs of sentimental ties to convention, personal distress, and empathy within two samples of young adult probationers. Substantial and cumulative increases in validity were associated with improved sampling of the predictor and criterion domains. Sampling of predictors was improved by introducing retests and the use of multimethod-multitrait predictors. Sampling of the criterion was improved through extended follow-up and by multimethod assessment. The findings are inconsistent with a number of the "post hoc" arguments made against dispositional constructs in criminology and provide a systematic example of the importance of general social psychological principles in the prediction of criminal behavior.

Self-Reported Criminal Propensity and Criminal Behavior: Threats to the Validity of Assessments of Attitudes and Personality

This paper is concerned with an enduring issue in personality and social psychology: the magnitude and nature of the association between what people say and what they do (Cialdini, Petty & Cacioppo, 1981; Deutscher, 1973; Shuman & Johnson, 1976). Following a period of disenchantment with dispositional constructs, there is a renewed optimism that the analysis of personal sentiments and traits represents a highly promising route to understanding human behavior (Ajzen & Fishbein, 1980; Bandura, 1977; Carver & Scheier, 1981; Epstein, 1979; Rotter, 1966; Shrauger & Osberg, 1983). Recent research has suggested that the magnitude of the attitude and personality links with behavior (A/P-B) varies with systematic errors in measurement, research design, and conceptualization of behavioral control processes. The present report quantifies the effects of these errors through examinations of a battery of self-report paper-and-pencil questionnaires in relation to the recidivism of young adult probationers. The studies are undertaken for two reasons. First, the effects of the errors have been well-documented within

isolated research programs but their cumulative effects have never been subjected to systematic exploration. Secondly, attitudes and personality have been assigned a central causal role in many criminological theories, yet their construct and predictive validities have received only cursory empirical examination (Tennenbaum, 1977).

Criminal Sentiments and Personality in Criminological Theory

Virtually all theories of criminal behavior assign criminal sentiments a central causal role (Nettler, 1978). From the subcultural perspectives, criminal conduct is understood to represent conformity with procriminal norms. At the personal level of analysis, attitudes, values, and beliefs represent the "internalization" of these procriminal norms. The internalization of rules and values is also basic to modern social learning and cognitive theories. According to differential association theory, criminal sentiments are acquired through association with criminal patterns and subsequently contribute to personal "definitions" of immediate situations which favor criminal acts (Sutherland & Cressey, 1978). Glaser (1956) was very explicit in stating that people pursue criminal behavior to the extent that they identify with real or imaginary persons from whose perspective criminal

behavior seems acceptable.

Proponents of control or containment theories (Hirschi, 1969; Reckless, 1967) suggested that personal ties to conventional values, pursuits, and conventional others were crucial in the prevention of criminal behavior. However, Sykes and Matza (1957) suggested how conventional ties could be overriden by sentiments which legitimatize illegal behavior by placing it in a favorable light and which neutralize the controlling influence of traditional affiliations by discrediting their moral authority. Anomie theory (Merton, 1969) placed the causal emphasis upon blocked opportunity in conventional pursuits. However, even within that structural orientation, other forms of deviance such as mental illness and drug abuse would be predicted in the absence of personal acceptance of the appropriateness of criminal behavior. Finally, radical criminologists have called for a recognition of the context of beliefs and values within which deviant and nondeviant choices are made (Taylor, Walton, & Young, 1973). Interestingly, they have reaffirmed the importance of personal sentiments in the context of a radical interpretation of most other aspects of traditional theories of deviance.

The classical positions on criminal behavior are

consistent with the general social learning and cognitive theories that have emerged in personality and social psychology. Criminological theories lack the functional expliciteness of Ajzen and Fishbein (1980), Bandura (1977), Carver and Scheier (1981), and Meichenbaum (1977), but criminological theories are not at all in conflict with the functional roles assigned personal sentiments within the more general theories. For example, sentiments may exert their functional role through the setting of standards against which self-regulation occurs (Bandura, 1977; Carver & Scheier, 1981), contribute to the "intentions" which are the immediate causes of behavior (Ajzen & Fishbein, 1980), and provide the content for the subvocal verbalizations and images which guide behavior (Meichenbaum, 1977).

While criminal sentiments are of outstanding theoretical importance, they comprise only one of the numerous variable sets which may relate to criminal behavior. Other attitudinal, personality, and situational factors are important. The other attitudinal variables examined in this report include alienation (isolation, normlessness, powerlessness, and a sense that the traditional routes to success are blocked), and conventional success orientation (value assigned to school and work).

The analysis of criminal personality has a long and empirically rich history, yet it has been largely disregarded by North American criminology. Throughout the years, attacks on a personality-crime link have made reference to Schuessler and Cressey's (1950) finding that only 42% of 113 studies found a significant link. However, only four of the thirty assessment instruments in those studies met modern psychometric standards (Quay, 1965). Two updates of the Scheussler and Cressey review (Waldo & Dinitz, 1967; Tennenbaum, 1977) reported that approximately 80% of the studies found a personality-criminality link. Still, the importance of personality was discounted through after-the-fact questioning of the construct validity of the personality measures. The most frequently successful scales were Psychopathic Deviate from the MMPI and Socialization from the CPI. Their validities were judged to reflect "nothing but" the criterion validity of items built into those scales during test construction.

The issue of construct validity is seriously underexplored (Andrews, 1983a, Brodsky & Smitherman, 1983). The "nothing but" argument demands studies which explore the incremental predictive validity of personality measures relative to the predictive validity

of assessments of criminal history. However, equally important is the extent to which assessments of criminal personality can be distinguished from assessments of criminal sentiments in convergent-discriminant terms (Campbell & Fiske, 1959) and in terms of predictive criterion validity. Interestingly, a recent attempt to focus on criminal personality appears to focus on what we have called criminal sentiments (Yochelson & Samenow, 1976a, 1976b; Samenow, 1984).

At least three dimensions of criminal personality have emerged so consistently across samples and methods of assessment that they cannot be ignored: psychopathy, neuroticism, and inadequacy-immaturity (for reviews see Warren, 1971; Quay, 1965; Hare & Schalling, 1978). Although many criteria of psychopathy have been suggested, most authors agree with Cleckley (1976) on the importance of repeated and generalized rule violations, lack of remorse, and egocentricity. Hogan's (1973) theory of moral conduct provides a nice summary in trait terms: insensitivity to the feelings, wishes and expectation of others (i.e., low empathy) and insensitivity to conventional rules and procedures (i.e., low socialization).

The other dimension of personality explored in this study is personal distress (self-esteem and

anxiety). Self-esteem is of interest for several reasons. In some versions of the subcultural and anomie theories, assaults upon self-esteem provide the motivation for the exploration of criminal behavior. Secondly, improved self-esteem is often a target in relationship-oriented correctional programs (Andrews, 1983a). Most generally, persons whose day-to-day experiences are characterized by tension, worry, and humiliation would seem to have little to lose from engagement in crime.

In summary, the attitudinal and trait variables to be explored in this study are criminal sentiments, alienation, conventional success orientation, personal distress, empathy, socialization, and the three dimensions of criminal personality (psychopathy, neuroticism, inadequacy-immaturity). The incremental validities of situational factors, such as social support for crime and trouble at home and at school, will also be examined.

Attitude/Personality-Behavior Issues

The threats to the validity of A/P-B links explored in this report are the following: the convergent and discriminant validities of A/P measures; the use of cross-sectional rather than longitudinal designs; assessments of distal and irrelevant causal constructs;

insufficient sampling of the criterion through insufficient follow-up and the use of monomethod measures of the criterion domain; inattention to the possibility of true change on the more dynamic of the predictor variables; and insufficient sampling of the predictor domain by a reliance upon monomethod assessments of some relevant constructs, and limited sampling of the total domain of relevant predictors.

Construct validity. Differences among constructs such as attitudes and traits may be easily trivialized when reduced to operational levels (Carver & Scheier, 1981). Whether the underlying construct be attitude, habitual behavioral disposition, or trait, respondents are essentially asked to review prior events and actions and consolidate essentially the same memories in only slightly different ways. High levels of multidomain-monomethod covariation may be expected. Thus, difficulties establishing discriminant validity represent a serious threat to the construct validity (Campbell & Fiske, 1959) of self-reported A/P measures. The construct validity of these measures may be at particular risk when discriminant validity is sought among measures which, in theory, are interdependent and share variance with the same criterion variables.

Appropriateness of research design. The most

common design in the A/P-B criminological literature involves comparisons between groups of people known to differ in their behavioral histories, yet often in a variety of other ways as well. For example, this extreme group approach might compare samples of incarcerates and nonincarcerates. The second most common approach involves gathering information on current or past levels of involvement with the criterion behavior within a specified sample and correlating A/P scores with criterion scores. Regardless of the controls introduced by selection or by statistical means, these two types of studies simply do not deal directly with the more important question regarding dispositional characteristics, specifically, the question of their predictive validity. A true test of the predictive criterion validity of dispositions requires a longitudinal design. The present study allows a comparison of A/P-B links established by each of the three approaches.

The use of distal causal constructs. The predictors chosen for analysis all have some support in theory. However, some constructs correspond more closely with the criterion domain than do others. Constructs such as alienation, conventional success orientation, empathy, and personal distress are much

more distal than procriminal sentiments as they do not correspond closely with criminal behavior per se. The situation is less clear in the case of personality measures. The personality constructs of psychopathy, neuroticism and inadequacy-immaturity are distal in theory yet the items in their paper-and-pencil operationalizations rely heavily upon reports of a deviant past or the items were selected because of their empirically demonstrated criterion validity. Given the preeminent status of past behavior as a predictor of future behavior (Loeber & Dishion, 1983), the criterion validity of assessments of criminal personality, relative to the validity of assessments of procriminal sentiments, is not obvious.

Improved sampling of the criterion through extended observation periods. A/P-B links will approach their asymptotes with increased sampling of the criterion (Epstein, 1979). In the context of predicting binary measures of criminal behavior (recidivist-nonrecidivist), the number of true positives can only increase with increases in the length of the follow-up period. Moreover, the gains associated with an extended follow-up should be stronger with temporally stable predictors than with more dynamic predictors. "True scores" on the latter are, by definition, more

susceptible to change (Andrews, 1983a). Overall, the expectation is that the validity of predictors will increase with increases in the length of follow-up.

Improved sampling of the criterion through multimethod assessment. The Epstein principle should also apply to multiple indicators of the criterion variable. The inclusion of officially undetected criminal activity, along with a measure of official reconvictions, should push validity estimates toward their asymptote. The criminological literature contains many discussions of the seriously deficient character of any given indicator of criminal behavior (Hawkins, Cassidy, Light, & Miller, 1977; Hudson, 1977; Martinson, 1974; Waldo & Griswold, 1979). Curiously, the error of insufficient sampling has been used to discredit empirically established relationships, when the errors may actually operate to systematically underestimate existing relationships.

Improved sampling of the predictor domain through the introduction of assessments of change. The shorter the time interval between attitudinal assessment and the subsequent opportunity to engage in criterion behavior, the stronger the A/P-B link (Schwartz, 1978). This principle is not inconsistent with the principle that validity increases with length of

follow-up. A retest, if it reflects real change, may better predict subsequent behavior than does an earlier test, yet the validity of both may increase with extended follow-up. However, estimates of the predictive criterion validity of the more dynamic assessment instruments have most to gain from a retest (Andrews, 1983a; Zimmerman & Williams, 1982). The conceptual and practical significance of attitudinal assessments is that they are theoretically capable of detecting real change, and the residual change, that change not predictable from initial testing, has the potential to show incremental predictive criterion validity. What is sought are instruments with "functional validity", which refers to the incremental predictive criterion validity of residual change scores (Andrews, 1983a).

Improved sampling of the predictors through multimethod and multidomain assessments. Just as any isolated indicator of the criterion is imperfect, so is any monomethod approach to the assessment of predictors. In this study, we examine the incremental predictive criterion validity of interview-derived alternatives to the paper-and-pencil assessment of criminal sentiments. In addition, we examine the incremental validity of personality, classical predictors such as age, gender, and criminal history (Monahan, 1981), and situational

factors (social support for crime, and trouble at home, school, and work).

In the process of examining the criminological and more general A/P-B issues, we also examine the extent to which systematic reductions in threats to validity raise validity estimates beyond the .30-.40 level (Epstein, 1979; Monahan, 1981). All of these issues are examined with two samples of young adult probationers and a test battery that had been previously employed in a series of correctional program evaluations.

Method

Subjects

Offenders. Two samples of young adult probationers were serving sentences of at least six months under the supervision of the Ottawa offices of the Ontario Ministry of Correctional Services. Sample 1 (n = 184) was drawn over a 30 month period during the years 1974 to 1976. Sample 2 (n = 192) was chosen from 1978 to 1980. All participants had offered signed consent to participate in a research project on roles for citizen volunteers in the supervision and counseling of probationers. Fewer than five per cent of the cases who were asked to participate declined the offer. The major restriction in sample selection was that requests for participation were made only when

there were openings in the Ottawa Volunteer Program. When there were openings, all new intake cases were eligible with the exception of probationers who had a history of extreme violence, who were directed by the court toward professional therapy, and, within Sample 2, who were over 25 years of age. Probationers in Sample 2 were given an honorarium of $10.00 upon completion of each of two testing sessions. Six-month retesting with the predictor battery was completed on approximately 80% of both Samples. The typical reason for incomplete retesting, other than direct refusals was failure to appear for more than three scheduled testing sessions. The final model includes 149 and 154 probationers from Samples 1 and 2, respectively.

In both samples, 80% of the probationers were male, less than 25% had prior adult criminal records, their present offences involved property crimes (70%), and their sentences were twelve months or less (70%). The mean ages were 21.01 years (SD = 6.67) and 17.97 (7.09) in Samples 1 and 2, respectively.

Volunteer probation officers. Seventy-four probation officers were involved in the supervision of the Sample 1 probationers and completed the same test battery. Sixty of these officers were citizen volunteers. Probationers within Sample 2 were

supervised by 62 citizen volunteers. The citizen volunteers were older than the probationers: 50% of the volunteers were over 29 years of age. The volunteers also included a greater proportion of women (60%) than did the probationers.

Assessment Procedures

The briefing and selection procedures have been described in detail by Andrews, Kiessling et al. (1979). The intake information sessions stressed the fact that participation was unrelated to the conditions of probation and that participants could withdraw from the research at any time without influencing their probationary status. All interviews were conducted on a one-to-one basis. The paper-and-pencil tests were administered individually or in small groups by research staff who identified themselves as university-based. Both the probation staff and researchers emphasized confidentiality.

Assessment Instruments: The Paper-and Pencil Battery

The paper-and-pencil questionnaire battery is introduced in Table 1 along with group means, Cronbach Alphas, and 6-month test-retest reliability estimates. The seven sets of measures were Criminal Sentiments, Alienation, Conventional Success Orientation, Personal Distress, Empathy, Socialization, and Criminal

Table 1

The Paper-and-Pencil Attitude and Personality Battery[a]

Measures	Number of Items	Alpha[b]	Test-Retest[c]	Intake Mean	Intake SD	Retest Mean	Retest SD
Criminal Sentiments							
Law, Courts, Police	25	.67	.62	87.05	11.99	86.79	12.77
Tolerance for Law Violations	10	.72	.41	25.12	6.46	24.56	6.27
Identification with Criminal Others	6	.53	.17	17.82	5.39	18.06	5.54
Alienation							
Isolation, Normless, Powerlessness	28	.74	.70	80.71	12.34	77.69	13.25
Awareness of Limited Opportunity	8	(na)	.46	18.50	4.14	18.16	3.87
Conventional Success Orientation							
Value Education	18	.68	.64	62.58	9.98	62.59	10.04
Value Employment	18	.82	.44	60.85	6.56	61.22	6.65
Personal Distress							
Self-Esteem	47	.79	.72	154.34	18.19	158.05	16.57
Anxiety	20	.78	.34	7.79	4.37	7.34	7.80
Empathy	62	.64	.48	31.66	5.44	31.62	6.09
Socialization	44	.74	.82	27.85	6.53	28.27	6.57
Criminal Personality							
Psychopathy	25	.62	.65	6.35	3.74	6.17	3.79
Neuroticism	27	.66	.71	12.53	5.04	11.81	5.40
Inadequacy-Immaturity	9	.40	.62	4.72	1.77	4.93	1.73

Notes: (a) The three measures of Criminal Sentences and Awareness of Limited Opportunity were based on the work of Reckless (1973). The other measures of Alienation was based on Dean (1961). Self-esteem was based on Bennett, Sorenson & Forshay (1971) and Anxiety on Bendig (1954). The Hogan (1969) Empathy Scale and the Gough (1969) Socialization Scale were used. The measures of Criminal personality were based on Peterson, Quay and Cameron (1959).

(b) The Cronbach Alphas were derived from the first 30 probationers in Sample 2.

(c) The test-retest correlations and statistics are based on a minimum of 122 Sample 2 probationers.

(na) not available.

Personality. The composition of the seven sets reflects the results of a number of factor analytic investigations (Andrews, Kiessling, Russell & Grant, 1979; Wilkins, 1975; Wormith, 1977), as well as criminological theory as reviewed in the introduction. The items for Attitudes Toward the Law, Courts and Police, Tolerance for Law Violations, and Identification with Criminal Others originate in the work of Reckless (1973; Mylonas & Reckless, 1963) and were adapted from versions in the Connecticut correctional system (Ontario Ministry of Correctional Services, 1970; Gendreau, Grant, Leipciger, & Collins, 1979). The current versions incorporate three important modifications. A five-point Likert response format was substituted for the true-false format in an attempt to increase sensitivity. Items were deleted if their content was more appropriately represented in another scale. The wording of items was modified to make them equally appropriate for adolescents and adults, men and women, and for people with and without an official criminal record. The items of Law, Courts and Police reflect respect for the law and criminal justice system without making specific reference to law violations and law violators. Tolerance for Law Violations reflects specific justifications for illegal activity, while Identification with Criminal Others

requests personal evaluative judgments regarding law violators.

Interview Measures of Criminal Sentiments, Conventional Ties, and Personal Problems

Three alternative measures of the construct of criminal sentiments were derived from structured intake interviews conducted by research staff on Sample 2: Expected Value of Crime (Harris, 1975) involves a weighing of the potential rewards and costs of criminal behavior; a single-item 11-point rating of the "chances of a criminal versus noncriminal future" modeled on the Ajzen-Fishbein concept of "intention" and on the Harris (1975) measure; and the Attitude section of the Level of Supervision Inventory (LSI; Andrews, 1983b). Two interview measures of ties to convention were the Expected Value of Conventional Behavior (Harris, 1975), which is a weighing of the rewards and costs associated with a noncriminal lifestyle, and the Education/ Employment section of the the LSI. The LSI measure reflects the stability of employment, level of education, and current levels of satisfaction with work or school. The final interview-based measure was the Emotional/Personal segment of the LSI which includes psychiatric contacts and the interviewers judgments regarding the emotional stability of the probationer.

Other Predictors

The paper-and-pencil battery included the two situational dimensions of delinquency identified by the factor analytic work of Peterson, Quay and Cameron (1959): Scholastic Maladjustment and Family Dissension. These measures are briefly described in Table 2. In addition, the paper-and-pencil battery administered within Sample 2 included two new measures of social support for crime: Affective Ties to Offenders and Access to Criminal Resources (see Table 2).

The criminal history of probationers was assessed in three ways. Within Sample 1, official criminal history was scored from presentence reports to reflect prior penetration of the correctional system: no previous convictions, at least one conviction but no history of incarceration, or prior incarceration. Within Sample 2, official criminal history was scored from intake interviews according to LSI Criminal History. The LSI measure reflects early involvement in crime (arrests before the age of 16), number of prior convictions, and prior penetration of the correctional system. An historical measure of unofficial criminal behavior was also collected on probationers within Sample 2. Thirty-two criminal acts were presented on cards in a structured interview and sorted by

Table 2

The Other Paper-and-Pencil and Interview-based Measures

Measures	Number of Items	Alpha[b]	Test-Retest[c]	Intake Mean	Intake SD	Retest Mean	Retest SD
Criminal Sentiments							
LSI Attitudes	4	.64	(na)	.54	1.04	(na)	
Expected Value, Crime	8	(na)	.45	.33	.22	.35	.22
Criminal Intentions	1	(na)	.22	.23	.25	.19	.22
Conventional Ties: Interview							
LSI Education/ Employment	10	.81	(na)	2.76	2.07	(na)	
Expected Value, Convention	8	(na)	.09	.67	.14	.73	.61
LSI Personal/Emotional	5	.54	(na)	.85	.83	(na)	
LSI Total	54	.72	(na)	10.10	5.62	(na)	
Social Support for Crime							
Affective Ties to Offenders	4	.80	.11	6.36	2.28	6.03	5.54
Access to Criminal	4	.81	.53	12.48	4.19	12.09	4.35
Delinquent Situations							
Scholastic Maladjustment	10	.50	.67	4.74	2.56	4.87	2.36
Family Dissension	11	.60	.77	3.10	2.71	3.09	2.57
Criminal History							
LSI Criminal History	10	.60	(na)	.54	1.03	(na)	
Unofficial (Self-Report	32	(na)	.52	6.02	4.64	4.62	4.17

Notes: (a) The Level of Supervision Inventory (LSI) measures are based on Andrews (1983b). The two Expected Value measures and Criminal Intentions were based on Harris (1975). The delinquent situation measures were based on Peterson, Quay and Cameron (1959).

(b) The alphas for the LSI (N = 578) are from Andrews (1983b). The remaining alphas were constructed on 30 probationers in Sample 2.

(c) The test-retest correlations and statistics are based on a minimum of 122 Sample 2 probationers.

(na) not available.

probationers into five categories according to their frequency of occurrence: never, at least once but not in the last six months, once, twice, or three or more times in the last six months. The six-month test-retest correlation for the number of different offenses ever committed was .77 (n = 164 probationers). The total number of self-reported occasions on which each offense was committed over the preceding six month period was employed to indicate unofficial criminal past. The correlation with LSI Criminal History was .23 (n = 164).

Other predictors included age at intake, gender, and the LSI Total Score. The LSI Total reflects the subtotals already noted in addition to problems in the areas of family relations, finances, companions, alcohol and drugs, and accommodation.

Measures of recidivism

Two measures of recidivism were employed. The measure of official recidivism was a binary measure of official reconvictions (absent-present), scored from reviews of police and probation files. Official recidivism for Sample 1 extended from the date of intake to the end of a three-year postprobation period. For Sample 2, official recidivism was monitored during the period of probation. The self-report measure of

unofficial criminal activity during the first six months of probation was available on the probationers in Sample 2. The correlation between two measures of recidivism was .34 within Sample 2 (n = 164).

Analysis and Presentation of Data

Throughout the paper, our interest is in the absolute and relative magnitude of relationships among variables (R's and R squares). Construct validity was examined through comparisons of the canonical correlations found between the seven sets of paper-and-pencil measures and the three sets of corresponding interview measures. These results are supplemented by a reorganization of data on the predictive validity of probation officer ratings reported elsewhere (Andrews, Kiessling, et al., 1979). Three approaches to the establishment of criterion validity were compared through inspections of the rank ordering of the seven sets of predictors with extreme groups, criminal history, and recidivism as criterion variables.

The effects of the quality of sampling of the predictor and criterion domains were quantified according to the proportionate increase in explained variance associated with improved sampling: the increase in R square achieved through improved sampling was divided by the R square found with less complete

sampling. The analyses of Sample 2 include both multivariate and univariate tests of those effects.

Predictive accuracy was explored through a series of discriminant analyses. Statistics are reported for overall correct classifications and Relative Improvement Over Chance (RIOC; Loeber & Dishion, (1982). RIOC provides some controls for the recidivism base rate and the selection ratio or number of cases predicted to become recidivists (that is, the selection ratios).

Results and Discussion

Construct Validity

Paper-and-pencil Criminal Sentiments shared substantial variance with the other paper-and-pencil measures. Within Sample 2, the overall Canonical Correlation was .66, suggesting that up to 44% of the variance in criminal sentiments was shared with the other paper-and-pencil measures. The variance which Criminal Sentiments shared with the other paper-and-pencil sets was as follows: Criminal Personality (29%), Alienation (28%), Conventional Success Orientation (18%), Socialization (13%), Personal Distress (7%) and Empathy (5%). All *p*'s were less than .05 and the direction of all univariate relationships was as expected.

In exploring construct validity, the seven sets of

paper-and-pencil measures were examined in relation to three sets of self-report measures derived from structured interviews. The third set was LSI Emotional/ Personal Problems. The squared Canonical Correlations are presented in Table 3. Interview based Criminal Sentiments was the strongest correlate of paper-and-pencil Criminal Sentiments. It accounted for 93% of the total variance shared between the paper-and-pencil measures and the interview assessments of criminal sentiments. Criminal Personality, the second strongest correlation of the interview measures, account for a maximum of only 41% of the shared variance. These results distinguish Criminal Sentiments from the other paper-and-pencil measures in terms of the magnitude of variance shared with the interview assessments of procriminal sentiments.

Additional evidence regarding the construct validity of the paper-and-pencil measures comes from examinations of correlations with the interview measures of conventional ties and personal problems (Table 3). Criminal Sentiments could account for no more than 35% of the total paper-and-pencil variance shared with either of these two sets of interview measures. In contrast, Criminal Personality, Alienation and Conventional Success Orientation could

Table 3

The Construct Validity of the Paper-and-Pencil Scores of Probationers (N = 192): Correlations with Interview Assessments of Criminal Sentiments, Conventional Ties and Personal Problems

	Criminal Sentiments		Conventional Ties		Personal Problems	
Measurement Set	$CanR^2$	$R^2/TotR^2$	$CanR^2$	$R^2/totR^2$	MR^2	$R^2/totR^2$
Criminal Sentiments	.262	.93	.068	.31	.021	.35
Alienation	.078	.28	.130	.59	.060	1.00
Conventional Success Orient.	.078	.28	.116	.52	.044	.73
Personal Distress	.040	.14	.078	.35	.047	.78
Empathy	.004(ns)	-	.023(ns)	-	.011(ns)	-
Socialization	.036(ns)	-	.084	.38	.060	1.00
Criminal Personality	.116	.41	.144	.65	.050	.83
Total Battery	.281	1.00	.221	1.00	.060	1.00

account for 52% to 100% of the variance. Empathy was unrelated to the interview measures. Personal Distress and Socialization, in order, accounted for 78% and 100% of the paper-and-pencil variance shared with the LSI measure of Emotional/Personal Problems.

Although the multitrait-monomethod variance was substantial in the paper-and-pencil battery, the overall pattern of convergent and discriminant validity supports the conceptual position that sentimental ties to crime, sentimental ties to convention, and personality disturbance are three reasonably distinct domains which can be captured by paper-and-pencil questionnaires. Criminal Personality was the least well differentiated of the paper-and-pencil measures in that it correlated with interview-derived scores on each of criminal sentiments, conventional ties, and personal problems.

Although comparisons between paper-and-pencil questionnaires and structured interviews speak to construct validity, method variance may be judged trivial because both data sets were based on self-report. Therefore, previously reported data (Andrews, Kiessling, et al., 1979) were reanalyzed in terms of construct validity and presented in Table 4 as convergent and discriminant coefficients. Correlations

Table 4

The Construct Validity of the Paper-and-Pencil Scores of Volunteer Probation Officers: Correlations with Assessments of Officer Preference.

Measure of Officer Performance	Criminal Sentiments	Criminal Personality
Ratings of Audio-Taped Sessions (n = 46)		
Anticriminal Modeling/Differential Reinforcement	-.48	.35
Problem Solving	(ns)	-.41
Ratings by Inservice Supervisor (n = 60)		
Anticriminal Modeling/DR	-.27	(ns)
Problem Solving	(ns)	-.35
Ratings by Screening Officer (n = 60)		
Overall Suitability	(ns)	-.35
Ratings by Preservice Trainer (n = 60)		
Overall Suitability	(ns)	-.37
Inservice Ratings by Probationers (n = 46)		
Help Received from Officer	(ns)	-.29
Relationship with Officer	(ns)	(ns)

Note: (a) All data from Andrews et al. (1977, Chapter 5). Because univariate analyses were conducted and because nonsignificant rs were not reported, the total values are the highest significant rs found between the criterion measures and the member of the paper-and-pencil sets.

(b) The Empathy scores of officers were positive correlates of the Screening Ratings (.37), the Preservice ratings (.37), and the Relationship ratings completed by probationers (.29). Socialization was a positive correlate of the tape-based ratings of Anticriminal Modeling (.45), of the inservice ratings of problem solving (.29) and of probationer reports on help received (.32). Self-esteem was a positive correlate of both the screening and preservice ratings (.24) and Anxiety was correlated with Preservice Training Rating (-.35).

are reported between the paper-and-pencil scores obtained by volunteer probation officers at the end of preservice training and ratings completed by significant others over the course of the volunteers' involvement in the program. The other raters and corresponding assessment instruments were as follows:

a) probation staff assessed volunteer applicants on a Screening Rating of Overall Suitability (four items with an alpha of .95) prior to the administration of the paper-and-pencil battery;

b) the probation staff who were responsible for the preservice training of volunteers completed the Training Rating of Overall Suitability (seven items with an alpha of .87) at the end of four weeks of training;

c) uninvolved undergraduate coders performed content analyses of audio-taped, one-to-one counselling sessions between volunteer officers and probationers on Anticriminal Modeling/Differential Reinforcement (interrater $\underline{r}$ = .83) and Problem Solving, (interrater $\underline{r}$ = .93); the tapes were made during the first and third month of counselling;

d) probationers rated their volunteer officers on the Relationship and Helping dimensions of the Mehaffey Relationship Questionnaire (alphas of .68 and .60, respectively) at the third month of counselling;

e) inservice supervisors of volunteers assessed their volunteers on Anticriminal Modeling/Differential Reinforcement and Problem Solving after 24 months. The dimensions of special interest were Anticriminal Modeling/Differential Reinforcement (the expression and reinforcement of anticriminal positions) and Problem Solving (reviewing the nature and sources of reward deficits, suggesting alternative course of action).

The pattern of results evident in Table 4 was very similar to that found within the probationer data. Criminal Sentiments were uniquely predictive of scores on the Anticriminal Modeling scales and unrelated to the other measures. On the other hand, Criminal Personality scores were associated with all but two of the measures of officer performance. Among the other paper-and-pencil correlates of officer performance, high Empathy volunteers made favorable early impressions on staff and were liked by their probationers, and Socialization yielded a pattern similar to Criminal Personality in that its correlates were scattered across the measures of officer performance (see footnote to Table 4 for specific rs).

Criterion Validity: Postdictive and Predictive

Three sets of criterion validity estimates based on Samples 1 and 2 are presented in Table 5: extreme

Table 5

Criterion Validity Estimates by Sample by Paper-and-Pencil Set, and by Type of Estimate: Extreme Groups, Criminal History, and Recividism.[a]

	Extreme Groups			Criminal History			Recidivism		
Measurement Set	S1 Mean Eta	S2 CR	Rank of Mean R^2	S1 MR	S2 CR	Rank of Mean R^2	S1 MR	S2 CR	Rank o Mean R
Criminal Sentiments	.24	.34	6	.12	.51	2	.37	.46	2
Alienation	.29	.34	5	.13	.31	5	.18	.29	4
Conventional Success Orientation	.15	.17	7	.21	.32	4	.16	.24	5
Personal Distress	.33	.37	4	.14	.18	6	.09	.26	6
Empathy	.46	.26	3	.08	.08	7	.04	.19	7
Socialization	.53	.25	2	.06	.42	3	.26	.37	3
Criminal Personality	.53	.55	1	.16	.51	1	.36	.51	1

Note: S1 Sample 1

S2 Sample 2

MR Multiple Correlation

CR Canonical Correlation

(a) Please see text for details on how the estimates were derived.

groups estimates, correlations with assessments of the criminal history of probationers, and predictive correlations with the recidivism of probationers. Extreme groups were defined in terms of relationships with the criminal justice system (probationers and citizens who volunteered for direct service roles in probation). Within Sample 1, the estimates were the mean etas derived from a series of Multiple Classification Analyses with Group as the factor. Within Sample 2, the estimates were canonical coefficients derived from a series of discriminant analyses with Group dependent. The seven sets of paper-and-pencil measures are rank ordered in Column 3 according to the mean of the R squares from Samples 1 and 2. According to the extreme groups approach, the most valid sets were Criminal Personality, Socialization, Empathy and Personal Distress.

The postdictive validity estimates for Sample 1 probationers were correlations with a three-level measure of prior penetration of the criminal justice system (no previous offence, official record without incarceration, official record with incarcerations). The postdictive estimates within Sample 2 were canonical correlations with unofficial criminal activity during the six months preceding probation and

an official criminal past scored according to LSI Criminal History. The criminal history estimates are rank ordered in Column 6 according to mean R squares. The dominant paper-and-pencil measures were Criminal Personality, Criminal Sentiments, Socialization, and Conventional Success Orientation.

Predictive estimates are also presented in Table 5. The criterion variable within Sample 1 was a binary measure of any reconvictions over a three-year postprobation follow-up. Within Sample 2, the multivariate criterion was composed of a binary measure of reconvictions for new offences during the probation period, and self-reported unofficial criminal activity during the first six months of probation. Within both samples, predictive validities reached statistically significant ($p < .05$) levels only in the cases of Criminal Sentiments, Criminal Personality, and Socialization.

All three approaches agreed on the criterion validity of Criminal Personality and Socialization. Relative to the predictive criterion estimates, the extreme groups approach seriously overestimated the validity of Personal Distress and Empathy while underestimating the validity of Criminal Sentiments. Statistical controls for dramatic differences in age

and gender between the extreme groups only exaggerated the inflated estimates for Self-esteem and Empathy and further reduced the already low estimates for Criminal Sentiments.

The rank orderings of averaged criterion estimates based on criminal history and recidivism were nearly identical. The only exception was that in both samples Conventional Success Orientation was a significant correlate of criminal past but unrelated to criminal future. Overall, the extreme groups approach to the establishment of criterion validity was a less reliable indicator of relative predictive criterion validity than were correlations with the criminal history of probationers.

The relative predictive value of distal versus proximal measures of criminal propensity is also illustrated in Table 5. Within both samples, the predictive criterion validity of the Criminal Sentiments measures exceeded the validity of the measures of Alienation, Conventional Success Orientation, Personal Distress, and Empathy, These results strongly support the principle that the less distal the predictor, the stronger the A/P-B link. However, the criterion validity of Socialization and Criminal Personality generally equalled or exceeded

that of Criminal Sentiments. In fact, Criminal Personality was among the top two correlates of criminality in both samples, regardless of how criminality was defined. Since none of the other sets of paper-and-pencil measures had any incremental predictive criterion validity relative to Criminal Sentiments and Criminal Personality, subsequent tables only present data for those two variable sets.

Improved Sampling of the Criterion

Table 6 presents the proportional increase in explained variance achieved by improved sampling of the criterion. Within Sample 1, the validity estimates found at the end of probation were compared with those found at the end of a three year post-probation follow-up. The effects were particularly evident within the personality set (91% increase) but were also evident within the less stable assessments of criminal sentiments (28% increase).

Table 6 also presents the increase in explained variance achieved within Sample 2 by combining official and unofficial sources of information on recidivism. On average, the multivariate pooling of criterion measures was associated with an increase of 40% in estimated predictive criterion validity. However, the two sets of predictors were dramatically different in

Table 6

Improved Sampling of the Criterion Measure: The Effects of an Extended Follow-Up and of Multimethod Assessments of Recidivism

Type of Criterion Improvement	Criminal Sentiments	Criminal Personality
The Postprobation Follow-Up of Sample 1		
MR, 1st Follow-Up	.33	.26
MR, total Follow-Up	.37	.36
Change R^2/R^2 Total Follow-Up	.030/.108	.063/.069
Proportional Increase	.28	.91
Multimethod Assessments with Sample 2		
Canonical R	.46	.51
MR, Official	.33	.45
MR, Unofficial	.44	.40
Change R^2/R^2 official	.105/.111	.56/.201
Proportional Increase	.94	.28
Change R^2/R^2 unofficial	.018/.190	.096/.161
Proportional Increase	.09	.60
X Change R^2/XR^2 univariate	.061/.151	.79/.121
Proportional Increase	.40	.43

their sensitivity to the two criterion measures. The majority of the explained multivariate variance could be attributed to official reconvictions in the estimates for Criminal Personality, but to unofficial criminal activity for Criminal Sentiments. As was the case with construct and criterion validity, the personality measures revealed a less differentiated pattern of validity.

Improved Sampling of the Predictor Domain Through Retesting

Criminal sentiments are theoretically and empirically unstable over time. Table 7 reports the increase in predictive criterion validity achieved by the introduction of a six-month retest. In both samples, the residual change on Criminal Sentiments was associated with substantial increases (48% to 88%) in the explained criterion variance. The validities of residual changes on Criminal Personality were much lower and were found only in Sample 2.

These results support the "functional validity" of criminal sentiments and underscore the practical point that the ability to forecast recidivism from an intake test does not mean that those risk levels are fixed. The results from Sample 1 are of particular value because they reflect only post-probation reconvictions.

Table 7

Improved Sampling of the Predictor Domain Through the Inclusion of Retests

Type of Predictor Improvement	Criminal Sentiments	Criminal Personality
Sample 1		
MR, Intake	.32	.39
MR, Intake & Change	.40	.39
Change Adjusted R^2/R^2 Adjusted Intake	.062/.102	.004/.149
Proportional Increase	.61	.03
Sample 2		
Multivariate:		
Can R, Intake	.35	.44
Can R, Intake & Retest	.46	.51
Change R^2/R^2 Intake	.093/.122	.065/.191
Proportional Increase	.76	.34
Univariate: Official Recidivism		
MR, Intake	.26	.39
MR, Intake & Retest	.33	.45
Change Adjusted R^2/R^2 Intake	.024/.050	.030/.138
Proportional Increase	.48	.22
Univariate: Unofficial Recidivism		
MR, Intake	.32	.35
MR, Intake & Retest	.44	.40
Change Adjusted R^2/Adjusted R^2 Intake	.077/.087	.023/.104
Proportional Increase	.88	.22

Improved Sampling of Criminal Sentiments and the Incremental Validity of Personality and History

The convergent validity of Criminal Sentiments was impressive relative to discriminant estimates but the absolute level of convergent validity was no greater than an R square of .26 (Table 3). Thus, paper-and-pencil Criminal Sentiments must be viewed as an insufficient sample of the underlying construct. The three assessments of criminal sentiments obtained from structured interviews were combined with the corresponding paper-and-pencil measures and examined in relation to recidivism in Table 8. Column 1 reveals that the interview measures had substantial incremental validity: the multivariate estimates increased by 83%, and the univariate estimates by 46% and 75%, for official and unofficial measures of recidivism, respectively.

A series of stepwise multiple regressions were run to explore the incremental validity of the paper-and-pencil situational measures (Family Dissension, Scholastic Maladjustment, and Social Support for Crime), Neuroticism and Inadequacy-Immaturity, and the interview assessment of sentimental ties to convention and personal problems. None was associated with significant increases in explained variance. Thus, the new set of predictors labeled Personality/History in

Table 8

Improved Sampling of the Predictors through Multimethod and Multidomain Assessments (Sample 2)

Analysis/ Criterion	Interview Sentiments	Personality History
Multivariate		
CR	.63	.74
R square	.396	.543
(Change R^2/R^2)	.180/.216	.146/.396
Proportional Increase	.83	.37
Univariate: Official		
MR	.49	.63
R square (Adj)	.182	.276
(Change Adj. R^2/Adj. R^2)	.108/.074	.094/.182
Proportional Increase	.46	.52
Univariate: Unofficial		
MR	.58	.69
R square (Adj)	.287	.378
(Change Adj R^2/ Adj R^2)	.123/.164	.091/.287
Proportional Increase	.75	.32

Column 2 of Table 8 was composed of Psychopathy (intake and retest), LSI Criminal History, Unofficial Criminal History, age, gender, and LSI Total score. The introduction of these relatively fixed personal and historical variables was associated with gains in validity of 52% and 32% for official and unofficial recidivism, respectively, relative to the total set of criminal sentiment measures.

Predictive Accuracy of the Total Models

Table 9 presents predictive accuracy statistics from a series of stepwise discriminant analyses conducted with Sample 2. The groups were defined in terms of official reconvictions (none-some), unofficial recidivism (median split at 3.5), and a combined measure of official and unofficial recidivism (no official reconvictions and unofficial score below median versus otherwise). The percentages of cases correctly classified was 74% for unofficial recidivism, 79% for the combined official/unofficial index, and 81% for official recidivism. The corresponding Relative Improvements Over Chance (RIOC) were 47%, 58%, and 67%.

A full cross-validation on Sample 1 of the discriminant function weights derived from Sample 2 was not possible because assessments of LSI Attitudes and Criminal Intentions were not available on the probationers

Table 9

Discriminant Analyses: Predictive Accuracy Statistics

Statistic	Sample 2 (N = 154) Official and Unofficial	Unofficial	Official	Sample 1 (N = 149) Official
Base Rate	.50	.45	.21	.36
Selection Ratio	.49	.43	.14	.26
Positives % (n in parentheses)				
True	39 (60)	31 (47)	8 (12)	20 (29)
False	10 (16)	12 (19)	6 (9)	7 (10)
Negatives				
True	40 (61)	43 (66)	73 (113)	57 (85)
False	11 (17)	14 (22)	13 (20)	17 (25)
% Correct	79	74	81	77
RIOC (%)	58	47	67	60
Standardized Canonical Discriminant Function Coefficients				
Unofficial History	.5349	.6833		(na)
LSI Criminal History	.2879	.3198	.5327	.4464
Retest & Tol. Law Viol.	.3822	.3886		
Retest Psychopathy	.5436	.3749	.4719	
Age			-.4519	-.5870
LSI Attitudes			.3808	(na)
Retest Criminal Intentions			.3272	(na)
Intake Identification with Criminal Others				.4910
Intake Psychopathy				.5603
Retest Identification with Criminal Others				.7267

na: not available

in Sample 1. However, age, prior official criminality, and the paper-and-pencil battery were available. Again, criminal sentiments and criminal personality were the dominant predictors of official recidivism with controls for age and criminal history. The correct classification rate and the RIOC were 77% and 60%, respectively, compared to 80% and 67% in Sample 2. The multiple correlation with official recidivism was .50 within Sample 1.

Inspection of the standardized canonical function coefficients presented in Table 9 reveals that age, criminal history, criminal sentiments, and psychopathy made independent contributions to the prediction of recidivism. These findings are inconsistent with the view that links between criminality and attitudes and personality reflect "nothing but" shared variance with criminal history.

The cumulative effects of reduced errors of measurement were substantial. Witihin Sample 2, the correlation of intake Criminal Sentiments with official recidivism was .26 ($\underline{R}^2$ = .054). Predictive validity estimates increased from that $\underline{R}$ square of .054 to .543 with improved sampling of the predictor and criterion domains. Within Sample 1, the R squares varied from .006 using intake Criminal Sentiments in relation to

recidivism at the end of the first follow-up, to a conservatively estimated .250 with the addition of retests, Criminal Personality, age, criminal history, and an extended follow-up.

These levels of predicive validity while outside the .30-.40 "barrier",are not without precedence in criminological studies which have employed improved methods of predictor sampling. For example, Gendreau and colleagues (1980) attained an R of .48 through the sampling of multimethod predictors (social history and paper-and-pencil questionnaires). Wormith and Goldstone (1984) reached .57 by combining postintake prognostic judgments with the more fixed factors assessable at intake. Wood and O'Donnell (1981) sampled postprobation changes in the situation of probationers and reported an R of .53. Andrews and Robinson (1984) assessed changes in the situations of probationers and reported correlations with recidivism in the .50 to .70 range.

Conclusions

There are obvious limits to the conclusions which can be drawn from this paper. While two samples of official offenders were represented, both samples were limited to young, white, adult probationers, most of whom were first adult offenders. Only inprogram

recidivism data were available in one sample, and there was no measure of unofficial recidivism in the other sample. Although the predictors were reasonably comprehensive, they were not exhaustive of the constructs which have been linked to crime. Intelligence (Hirschi & Hindelang, 1977) and bio-physical attributes (Hare & Schalling, 1978) are the most obvious of the predictors not sampled. In addition, roles for moderator variables such as social support for deviance (Andrews & Kandel, 1981) and self-management styles (Carver & Scheier, 1981; Snyder, 1974) were not explored.

Within these limits, the results have shown that paper-and-pencil assessments of criminal sentiments and criminal personality were superior predictors of recidivism relative to assessments of sentimental ties to convention, personal distress, empathy and socialization. Independent evidence of the meaningfulness of criminal sentiments was found in examinations of their construct validity. Although the assessments of criminal personality were highly general in their criterion validity, the criterion validity of sentiments and personality were independent of criminal history, age, and each other. Thus, the dominant objections to dispositional factors found in the criminological literature were not supported in this

study. Finally, substantial cumulative effects on the predictive criterion validity of self-reports were associated with improved sampling of both the predictor and criterion domains. Renewed efforts in the ethical control of recidivism are indicated, and such efforts should prove to be empirically rich and socially important for the field of personality and social psychology.

References

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall.

Andrews, D.A. (1983a). Assessment of outcome in correctional samples. In M.J. Lambert, E.R. Christensen, & S.S. DeJulio (Eds.), The assessment of psychotherapy outcome (pp. 160-201). New York: John Wiley.

Andrews, D.A. (1983b). The Level of Supervision Inventory: The first follow-up. Toronto: Ontario Ministry of Correctional Services.

Andrews, D.A., Kiessling, J.J., Russell, R.J., & Grant, B.A. (1979). Volunteers and the one-to-one supervision of adult probationers. Toronto: Ontario Ministry of Correctional Services.

Andrews, D.A., & Robinson, D. (1984). The Level of Supervision Inventory: Second report. A report to Research Services. Toronto: Ontario Ministry of Correctional Services.

Andrews, K.H., & Kandel, D.B. (1979). Attitude and behavior: specification of the conginent consistency hypothesis. American Sociological Review, 44, 298-310.

Bandura, A. Social learning theory. (1977). Englewood Cliffs, NJ: Prentice-Hall.

Bendig, A.W. (1954). Manifest anxiety short form. Journal of Consulting Psychology, 18, 266.

Bennett, L.A., Sorenson, D.E. & Forshay, H. (1971). The application of self-esteem measures in a correctional setting. Journal of Research in Crime and Delinquency, 8, 1-9.

Brodsky, S.L., & Smitherman, H.O'N. (1983). Handbook of scales for research in crime and delinquency. New York: Plenum Press.

Campbell, D.T., & Fiske, D.W. (1959). Convergent and discriminant validation by the multitrait-mulitmethod matrix. Psychological Bulletin, 56, 81-105.

Carver, C.S., & Scheier, M.F. (1981). Attention and self-regulation: A control-theory approach to human behavior. New York: Springer.

Cialdini, R.B., Petty, R.E. & Cacioppo, J.T. (1981). Attitude and attitude change. In M.R. Rosenzweig, & L.W. Porter (Eds.), Annual Review of Psychology (Vol. 32). Palo Alta, CA: Annual Reviews Inc., 357-404.

Cleckley, H. (1976). The mask of sanity. (5th ed.). St. Louis, MO: Mosley.

Dean, D. (1961). Alienation: its meaning and measurement. American Sociological Review, 26, 753-771.

Deutscher, I. (1973). What we say/what we do: Sentiments and acts. Glenview, IL: Scott, Foresman.

Epstein, S. (1979). The stability of behavior: on predicting most of the people much of the time. Journal of Personality and Social Psychology, 37, 1097-1126.

Gendreau, P., Grant, B.A., Leipciger, M., & Collins, C. (1979). Norms and recidivism rates for the MMPI and selected experimental scales on a Canadian delinquent sample. Canadian Journal of Behavioral Science, 11, 21-31.

Gendreau, P., Madden, P. G., & Leipciger, M. (1980). Predicting recidivism with social history information and comparison of their predictive power with psychometric variables. Canadian Journal of Criminology, 22, 3-11.

Glaser, D. (1956). Criminality theories and behavioral images. American Journal of Sociology, 61, 433-444.

Gough, H.G. (1969). Manual for the California Psychological Inventory. (Rev. Ed.) Palo Alto, CA: Consulting Psychologists.

Hare, R.D., & Schalling, D. (1978). Psychopathic behavior: approaches to research. Chichester: John Wiley.

Harris, A.R. (1975). Imprisonment and the expected value of criminal choice. American Sociological Review, 40, 71-87.

Hawkins, J.O., Cassidy, C.H., Light, M.B., & Miller, C. (1977). Interpreting official records as indicators of recidivism in evaluating delinquency prevention programs. Criminology, 3, 397-423.

Hirschi, T. (1969). Causes of delinquency. Berkeley: University of California.

Hirschi, T. & Hinderlang, M.J. (1977). Intelligence and delinquency: A revisionist review. American Sociological Review, 42, 571-587.

Hogan, R.T. (1969). Development of an empathy scale. Journal of Consulting and Clinical Psychology, 33, 307-316.

Hogan, R.T. (1973). Moral conduct and moral behavior: a psychological perspective. Psychological Bulletin, 79. 217-232.

Hudson, J. (1977). Problems of measurement in criminal justice. In L. Rutman (Ed.). Evaluation research methods: a basic guide (pp. 75-100). Beverly Hills: Sage.

Loeber, R., & Dishion, T. (1983). Early predictors of male delinquency: A review. Psychological Bulletin, 94, 68-99.

Martinson, R.M. (1974). What works? - Questions and answers about prison reform. Public Interest, 35, 22-54.

Meichenbaum, D. (1977). Cognitive behavior modification. New York: Plenum.

Merton, R.K. (1969). Social structure and anomie. In D.R. Cressey & D.A. Ward (Eds.), Delinquency, crime and social process (pp. 254-284). New York: Harper & Row.

Monahan, J. (1981). Predicting violent behavior: An assessment of clinical techniques. Beverly Hills: Sage.

Mylonas, A.D., & Reckless, W.C. (1963). Prisoners attitudes toward law and legal institutions. Journal of Criminal Law, Criminology and Police Science, 54, 479-484.

Nettler, G. (1978). Explaining crime. New York: McGraw Hill.

Ontario Ministry of Correctional Services. (1970). A package of materials from a North American survey of test instruments. Toronto: Research Services.

Peterson, D.R., Quay, H.C., & Cameron, G.R. (1959). Personality and background factors in juvenile delinquency as inferred from questionnaire responses. Journal of Consulting Psychology, 23, 395-399.

Quay, H.C. (1965). Juvenile delinquency: research and theory. Princeton: D. Van Nostrand.

Reckless, W.C. (1967). The crime problem. New York: Appleton-Century-Crofts.

Reckless, W.C. (1973). American criminology: New directions. New York: Appleton-Century-Crofts.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80 (1, Whole No. 609).

Samenow, S.E. (1984). Inside the criminal mind. New York: Times Books.

Schuessler, K.F., & Cressey, D.B. (1950). Personality characteristics of criminals. American Journal of Sociology, 55, 476-484.

Schuman, H., & Johnson, M.P. (1976). Attitudes and Behavior. Annual Review of Sociology, 2, 161-207.

Schwartz, G.H. (1978). Temporal instability as a moderator of the attitude-behavior relationship. Journal of Personality and Social Psychology, 36, 715-724.

Shrauger, J.S., & Osberg, T.M. (1981). The relative accuracy of self-predictions and judgments by others in psychological assessment. Psychological Bulletin, 90, 322-351.

Snyder, M. (1974). Self-monitoring of expressive behaviour. Journal of Personality and Social Psychology, 30, 526-537.

Sutherland, E.H., & Cressey, D.R. (1978). Criminology (10th Ed.), Philadelphia, PA: Lippincott.

Sykes, G., & Matza, D. (1957). Techniques of neutralization: A theory of delinquency. American Sociological Review, 22, 664-670.

Taylor, I., Walton, P., & Young, J. (1973). The new criminology: For a social theory of deviance. London: Routledge.

Tennenbaum, D.J. (1977). Personality and criminality: A summary and implications of the literature. Journal of Criminal Justice, 5, 225-235.

Waldo, G.P., & Dinitz, S. (1967). Personality attributes of the criminal: An analysis of research studies, 1950-1965. Journal of Research in Crime and Delinquency, 4, 185-202.

Waldo, G.P., & Griswold, D. (1979). Issues in the measurement of recidivism. In L. Sechrest, S. White & E. Brown (Eds.), The rehabilitation of criminal offenders: Problems and prospects (pp. 225-248). Washington, DC: National Research Council.

Warren, M. (1971). Classification of offenders as an aid to efficient management and effective treatment. Journal of Criminal Law, Criminology and Police Science, 62, 239-258.

Wilkins, B. (1975). Differential association and criminal behaviour. Unpublished honours thesis, Carleton University, Ottawa.

Wood, Y.R., & O'Donnel, C.R. (1981). Adult probation adjustment: a twelve month follow up. Journal of Community Psychology, 9, 86-92.

Wormith, J.S. (1977). Converting prosocial attitude change to behaviour change through self-management training. Unpublished doctoral dissertation, University of Ottawa, Ottawa.

Wormith, J.S., & Goldstone, C.S. (1984). The clinical and statistical prediction of recidivism. Criminal Justice and Behavior, 11, 3-34.

Yochelson, S., & Samenow, S.E. (1976a). The criminal personality (vol. 1): A profile for change. New York: Jason Aronson.

Yochelson, S., & Samenow, S.E. (1976b). The criminal personality (vol. 2): The change process. New York: Jason Aronson.

Zimmerman, D.W., & Williams, R.H. (1982). On the high predictive potential of change and growth measures. Educational and Psychological Measurement, 42, 961-968.

Author Notes

The original project was funded by the Law Reform Commission of Canada, the Ministry of the Solicitor General of Canada, the Canada Council, and the Community and the Research Services divisions of the Ontario Ministry of Correctional Services. The second project was made possible by Grants 410-80-0729 and 410-78-0027 to the first author from the Social Sciences and Humanities Research Council of Canada. Portions of the analyses were made possible with the support of Graduate Studies and Research (Carleton University). Opinions expressed are those of the authors. Thanks to the managers, officers, citizen volunteers, and probationers in Ottawa. Thanks to Susan Mickus, David Robinson, Bill Jackson, Elmer Toffelmire, Lorraine Braithewaite, and Andy Birkenmayer.

The views expressed herein are those of the authors and are not necessarily those of the Ontario Ministry of Correctional Service or the Ministry of the Solicitor General of Canada.